

Math 1  
Quiz 7 Review

This quiz will be on Wednesday, November 8 and also covers arithmetic and geometric sequences.

Arithmetic sequences have a common difference  $d$ . Thus, the portion of the recursive formula that tells how to get from one term to the next is of the form

$$s(n+1) = s(n) + d.$$

Also, if any arithmetic sequence is graphed, the points will be collinear, and the slope of the line will be  $d$ . Assuming that the arithmetic sequence starts at  $n = 1$ , its explicit formula is of the form

$$s(n) = d(n-1) + s(1).$$

You will need to adjust if the starting value is different.

Geometric sequences have a common ratio  $r$ . Thus, the portion of the recursive formula that tells how to get from one term to the next is of the form

$$s(n+1) = s(n) \cdot r.$$

Also, if any geometric sequence is graphed, the points will lie on one exponential curve (if  $r > 0$  and  $r \neq 1$ ) or two exponential curves (if  $r < 0$  and  $r \neq -1$ ). Assuming that the geometric sequence starts at  $n = 1$ , its explicit formula is of the form

$$s(n) = s(1) \cdot r^{n-1}.$$

You will need to adjust if the starting value is different.

Note that, for geometric sequences, we rarely deal with the cases  $r = -1$ ,  $r = 0$ , and  $r = 1$ .

Sequences that are neither arithmetic nor geometric may have recursive and explicit forms; however, even if they do exist, they may be difficult to determine. Not all sequences (even those whose outputs are all numbers) have definite patterns.